

CLAIMS

1. A predistortion control device (1), including:
a first predistortion control input (10) connectable to a power amplifier output (21);
5 a second predistortion control input (11) connectable to a signal contact (30,31) of a predistortion device (3); and
a predistortion control output (12) connectable to a control contact of the predistortion device,
the predistortion control device (1) further including:
10 a cross-correlator device (110) connected with
a first cross-correlator input (1101,1101I,1101Q) to the first predistortion control input (10) and
a second cross-correlator input (1102,1102I,1102Q) to the second predistortion control input (11), which cross-correlator device (110) further has
15 a cross-correlator output (1112) (1112) at which a cross-correlation signal can be presented, the cross-correlation signal representing a measured cross-correlation of signals presented at the first cross-correlator input (1101,1101I,1101Q) and the second cross-correlator input (1102,1102I,1102Q);
a predistortion function selector device (120), connected with
20 a selector input (1210) to the cross-correlator output (1112), and with
a selector output (1211) to the predistortion control output (12), at which selector output a predistortion control signal can be presented, said predistortion control signal representing a predistortion function determined on the basis of said cross-correlator signal.
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2. A predistortion control device (1) as claimed in claim 1, further including a quantiser device (101) connected with a quantiser input to the first predistortion control input, and with a quantiser output to the first cross-correlator input (1101,1101I,1101Q).
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3. A predistortion control device (1) as claimed in claim 2, wherein the quantiser device (101) is a single-bit quantiser.

4. A predistortion control device (1) as claimed in claim 2 or 3, wherein the quantiser (101) is operable as a subsampling device.
- 5 5. A predistortion control device (1) as claimed in any one of claims 2-4, wherein the cross-correlator device (110) includes a single-bit multiplier (111).
6. A predistortion control device (1) as claimed in any one of the preceding claims, further including
- 10 a distortion device (102) connected with a distortion input to the first predistortion control input, and connected with a distortion output to the quantiser input.
7. A predistortion control device (1) as claimed in claim 6, wherein the distortion device includes a random distortion device.
- 15 8. A predistortion control device (1) as claimed in claim 6 or 7, wherein the distortion device includes a periodic distortion device.
9. A predistortion control device (1) as claimed in any one of the preceding
- 20 claims, wherein the second predistortion control input (11) is connectable to a signal output of a predistortion device.
10. A predistortion control device (1) as claimed in any one of the preceding claims, further including:
- 25 an averaging device (112) capable of determining a time averaged cross-correlation value from a memory connected to the cross-correlator output (1112), for storing a number of cross-correlation values, which averaging device has an averaging output connected to the selector input, for presenting time averaged cross-correlation values to the predistortion function selector device (120).
- 30 11. An assembly of a predistortion control device (1) as claimed in any one of claims 1-10, and a predistortion device (3) having signal contacts (30,31) including a predistortion input (30) for receiving an original signal to be predistorted and a

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predistortion output (31) for providing a predistorted output signal based on the original signal, and a control input contact (32) connected to the predistortion control output (12) at which a predistortion control signal can be provided, in response to which predistortion control signal the predistortion

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12. An assembly as claimed in claim 11, further including a power amplifier (2) connected with an amplifier input (20) to the predistortion output (31), and with an amplifier output (21) to the first predistortion control input (100).

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13. An electronic device (200), such as a wireless communication device, including a predistortion control device (1) or an assembly as claimed in any one of claims 1-10.

14. A predistortion control method, including:
receiving an output signal;

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receiving a predistortion signal from a signal contact of a predistortion device;
determining a cross-correlation value by cross-correlating the power amplifier output signal and the predistortion signal;
comparing the determined cross-correlation value with an model cross-correlation value;

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determining from said comparing a predistortion function, and
providing a predistortion control signal representing said predistortion function.

15. A predistortion control method, as claimed in claim 14, comprising:
minimising a difference between the determined cross-correlation value with an
25 model cross-correlation value, and
deriving from said minimising the predistortion function.